

**Amendments to the Claims:**

Claims 1. – 34. (Canceled)

35. (New) A variable gain optical amplifier, comprising:

    a first amplifier stage including an input, an output, an optical pump, and a power source for the optical pump;

    a second amplifier stage including an input, an output, an optical pump, and a power source for the optical pump;

    a variable optical attenuator coupled to the output of the first amplifier stage and the input of the second amplifier stage, the variable optical attenuator including a setting indicative of an attenuation of the variable optical attenuator;

    a first optical tap indicative of an optical power of the input of the first amplifier stage;

    a second optical tap indicative of an optical power of the output of the second amplifier stage; and

    controller circuitry including:

        one or more inputs coupled to the first optical tap, the second optical tap, and the setting of the variable optical attenuator,

        one or more outputs coupled to one or more of the power source for the optical pump of the first amplifier stage and the power source for the optical pump of the second amplifier stage,

        wherein the controller circuitry maintains a flat total gain of the first amplifier stage and the second amplifier stage, based at least on the optical power of the input of the first amplifier stage, the optical power of the output of the second amplifier stage, and the setting indicative of the attenuation of the variable optical attenuator.

36. (New) The amplifier of claim 35, further comprising:

    a third optical tap indicative of an optical power of the input of the second amplifier stage, the third optical tap coupled to the one or more inputs of the controller circuitry,

    wherein the controller circuitry is maintains a flat total gain of the first amplifier stage and the second amplifier stage, further based at least on the optical power of the input of the second amplifier stage.

37. (New) The amplifier of claim 35, further comprising:

a third optical tap indicative of an optical power of the output of the first amplifier stage, the third optical tap coupled to the one or more inputs of the controller circuitry,

wherein the controller circuitry is maintains a flat total gain of the first amplifier stage and the second amplifier stage, further based at least on the optical power of the output of the first amplifier stage.

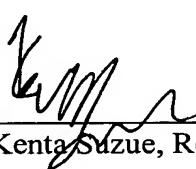
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Con of U.S. 09/986,991 filed Nov. 13, 2001

**CONCLUSION**

Applicants submit this Preliminary Amendment prior to the examination of this application on the merits. Since the present amendment does not introduce new matter, Applicants respectfully request its entry prior to the examination of the present application.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 20397.839.301).

Respectfully submitted,

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